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EXAMINER

BAREFORD, KATHERINE A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1762

DATE MAILED: 04/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/811,610

Applicant(s)

CLAYTON ET AL.

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 10-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>7/04</u> . | 6) <input type="checkbox"/> Other: ____. |

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-9, drawn to a method, classified in class 427, subclass 446.
 - II. Claims 10-15, drawn to an apparatus, classified in class 118, subclass 302.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process, such as laser densification, as the apparatus does not require a friction stir welding tool.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Chau on April 5, 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-9. Affirmation of this election must be made by applicant in replying to this Office action.

Claims 10-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

6. The disclosure is objected to because of the following informalities: at page 1, reference should be made to the priority claim to provisional application 60/458,724, filed March 28, 2003, which is referred to in the transmittal papers.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-3 and 6-8 are rejected under 35 U.S.C. 102(a or e) as being anticipated by Mahoney (US 2003/0042291).

Mahoney teaches a method that provides for densification of a thermal spray coating. See paragraphs [0008] and [0031]. The method includes depositing a thermal spray coating on a substrate surface. Figures 4A and 4B and paragraph [0031] (layer 16). The thermal spray coating and the substrate are later mixed by friction stir welding. Figures 5-6 and paragraphs [0033] – [0036].

Claim 2: the mixing causes metal flow of the thermal spray coating to a depth controlled by a nib of the friction stir coating weld tool into the substrate. Figures 5-6 and paragraphs [0033] – [0036].

Claim 3: the thermal spray coating can be deposited by plasma spray. Paragraph [0031].

Claim 6: the substrate can be a ferrous alloy. Paragraph [0028].

Claim 7: the substrate can be a non-ferrous alloy. Paragraph [0028].

Claim 8: the thermal spray coating can be a metal. Paragraph [0029].

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahoney as applied to claims 1-3 and 6-8 above, and further in view of Lazarz et al (US 6227435).

Mahoney teaches all the features of these claims except powder flame spraying (claim 4) and two wire electric arc spraying (claim 5).

However, Lazarz teaches that a conventional method for applying metallic and other coatings is by thermal spraying. Column 1, lines 20-35. Thermal spraying processes all require a heat source, a propelling device and a feed material. Column 1, lines 25-35. Thermal spraying encompasses spraying powder and wire materials, by processes such as plasma spraying, flame spraying (combustion and HVOF) and electric arc spraying (including twin wire electric arc spraying). See column 1, lines 25-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mahoney to replace the plasma spraying with flame spraying of powder materials or twin wire electric arc spraying as suggested by Lazarz with an expectation of providing a desirable coating to be treated by friction stir welding because Mahoney teaches a method of coating a metal material that includes the thermal spray method of plasma spraying, and Lazarz teaches that when coating metal metals desirably plasma spraying or similar thermal spraying methods such as flame spraying and twin wire electric arc spraying can be used to apply the material from powder or wire.

12. Claim 9^{is} rejected under 35 U.S.C. 103(a) as being unpatentable over Mahoney as applied to claims 1-3 and 6-8 above, and further in view of Sherman (US 2003/0012678).

Mahoney teaches all the features of this claim except determining a time between depositing the thermal spray coating and the friction stir welding according to a distance between a spray gun and a friction stir welding tool and a speed of the substrate relative to the gun and tool.

However, Sherman teaches applying a thermal spray coating to a substrate and then to densify the coating using a friction tool following behind. Figures 1 and 2 and paragraphs [0012] – [0016], [0027] and [0032]. This provides a controlled time between the coating and the welding. Paragraph [0032] and figure 2.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mahoney to control the time between coating and welding as suggested by Sherman with an expectation of providing a desirably efficient coating treatment because Mahoney teaches a method that includes a thermal spray coating followed by a later friction welding treatment, and Sherman teaches that when thermal spray coating followed by a friction welding treatment, it is desired to perform the treatment as quickly as possible (see paragraph [0032]). One of ordinary skill in the art would perform routine experimentation to optimize the time between treatments based on the specific results desired and coating materials used.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kath B/S
KATHERINE BARRETT
PRIMARY EXAMINER